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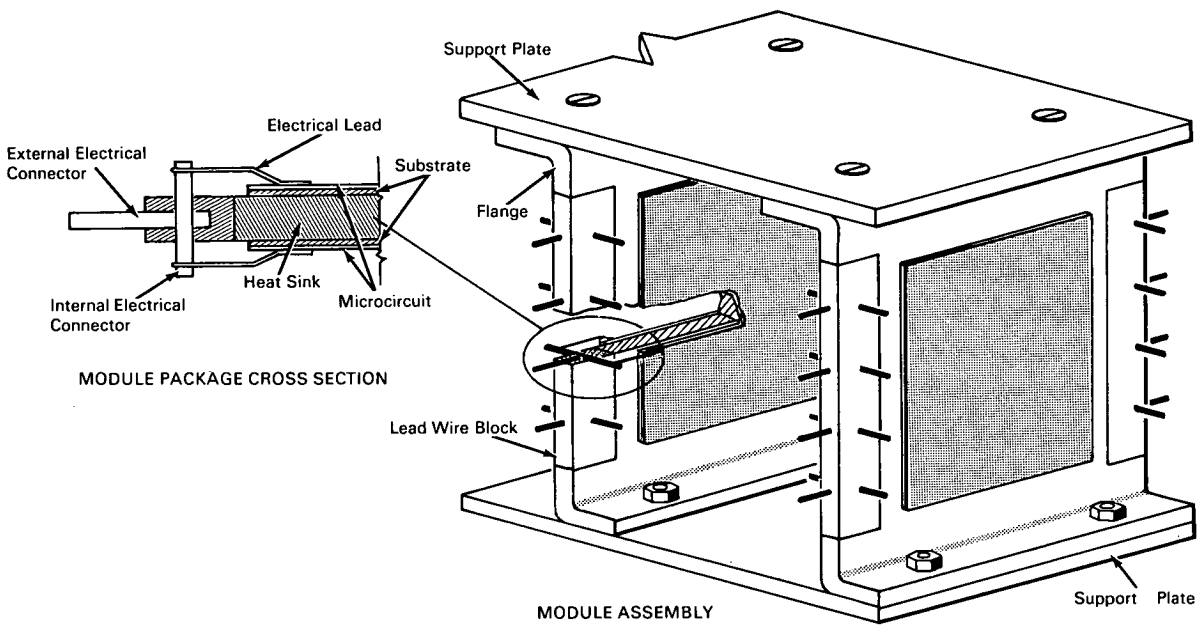
Brief 66-10245

NASA TECH BRIEF

Rugged Microelectronic Module Package Supports Circuitry on Heat Sink



The problem:

To devise a rugged, module package for thin film hybrid microcircuits. The module package must protect the circuitry from shock and vibration loads of up to 50 g, effectively dissipate internally generated heat, and simplify electrical connections between adjacent modules and to external circuits.

The solution:

A module package incorporating a rigid, thermally conductive support structure, which serves as a heat sink for the thin film hybrid microcircuits, and a lead wire block in which T-shaped electrical connectors are potted.

How it's done:

The heat sink structure of the module package, made of a metal having good thermal conductivity, is bent in opposite directions at its upper and lower ends to form flanges. Lead wire blocks of cast or molded epoxy resin are fastened to the other two opposite edges of the heat sink with an epoxy cement. The electrical connectors, welded to form a T-junction, are cemented into position in slots provided in the epoxy blocks. An electrically insulating substrate, such as glass, upon which the hybrid microcircuits are deposited, is cemented to each of the two faces of the heat sink. Electrical leads are welded between the ends

(continued overleaf)

of the internal electrical connectors and the circuits on opposite faces of the substrate. The cross-member connector of each T-junction is used to join the microcircuits to external circuitry. Any number of the module packages can be installed as an integral unit by bolting the heat sink flanges to a pair of parallel support plates.

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B66-10245

Patent status:

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Source: A. L. Johnson
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